SURGICAL PERIODONTICS: MUCOGINGIVAL PROCEDURES

Policy Number: DCP015.02  Effective Date: March 1, 2017

INSTRUCTIONS FOR USE

This Dental Coverage Policy provides assistance in interpreting UnitedHealthcare dental benefit plans. When deciding coverage, the member specific benefit plan document must be referenced. The terms of the member specific benefit plan document [e.g., Certificate of Coverage (COC), Schedule of Benefits (SOB), and/or Summary Plan Description (SPD)] may differ greatly from the standard benefit plan upon which this Dental Coverage Policy is based. In the event of a conflict, the member specific benefit plan document supersedes this Dental Coverage Policy. All reviewers must first identify member eligibility, any federal or state regulatory requirements, and the member specific benefit plan coverage prior to use of this Dental Coverage Policy. Other Clinical Policies and Coverage Guidelines may apply. UnitedHealthcare reserves the right, in its sole discretion, to modify its Policies and Guidelines as necessary. This Dental Coverage Policy is provided for informational purposes. It does not constitute medical advice.

BENEFIT CONSIDERATIONS

Before using this policy, please check the member specific benefit plan document and any federal or state mandates, if applicable.

Essential Health Benefits for Individual and Small Group

For plan years beginning on or after January 1, 2014, the Affordable Care Act of 2010 (ACA) requires fully insured non-grandfathered individual and small group health plans (inside and outside of Exchanges) to provide coverage for Pediatric Dental Essential Health Benefits ("EHBs"). Large group plans (both self-funded and fully insured), and small group ASO plans, are not subject to the requirement to offer coverage for Pediatric Dental EHBs. However, if such plans choose to provide coverage for benefits which are deemed Pediatric Dental EHBs, the ACA requires all dollar limits on those benefits to be removed on all Grandfathered and Non-Grandfathered plans. The determination of which benefits constitute Pediatric Dental EHBs is made on a state by state basis. As such, when using this policy, it is important to refer to the member specific benefit plan document to determine benefit coverage.

COVERAGE RATIONALE

Pedicle Soft Tissue Graft Procedure

Pedicle soft tissue graft procedure is indicated for the following:

- Areas with less than 2 mm of attached gingiva
- Unresolved sensitivity in areas of recession
- Progressive recession or chronic inflammation
- For teeth with subgingival restorations where there is little or no attached gingiva to improve plaque control
- Ridge augmentation
- To increase vestibular depth for the correct fit of prosthesis
- To widen zone of attached gingiva for prosthetic abutment teeth
- To increase vestibular depth to allow proper oral hygiene techniques
- Gingival clefting
Pedicle soft tissue graft procedure is not indicated for the following:
- Roots covered with thin bony plates
- Patients with an untreated medical condition

**Autogenous Connective Tissue Graft**

Autogenous connective tissue graft is indicated for the following:
- Areas with less than 2 mm of attached gingiva
- Unresolved sensitivity in areas of recession
- Progressive recession or chronic inflammation
- For teeth with subgingival restorations where there is little or no attached gingiva to improve plaque control
- Ridge augmentation
- To increase vestibular depth for the correct fit of prosthesis
- To widen zone of attached gingiva for prosthetic abutment teeth
- To increase vestibular depth to allow proper oral hygiene techniques
- Gingival clefting

Autogenous connective tissue graft is not indicated for the following:
- Broad, shallow palatal donor site
- Excessively glandular or fatty submucosal tissue in donor site
- A donor site with roots covered with thin bony plates
- Patients with an untreated medical condition

**Non-Autogenous Connective Tissue Graft**

Non-autogenous connective tissue graft is indicated for the following:
- Areas with less than 2 mm of attached gingiva
- Unresolved sensitivity in areas of recession
- Progressive recession or chronic inflammation
- For teeth with subgingival restorations where there is little or no attached gingiva to improve plaque control
- Ridge augmentation
- To increase vestibular depth for the correct fit of prosthesis
- To widen zone of attached gingiva for prosthetic abutment teeth
- To increase vestibular depth to allow proper oral hygiene techniques
- Gingival clefting

Non-autogenous connective tissue graft is not indicated for the following:
- When indications for connective tissue grafting are not met
- Patients with an untreated medical condition

**Combined Connective and Double Pedicle Graft**

Combined connective and double pedicle graft is indicated for the following:
- Areas with less than 2 mm of attached gingiva
- Unresolved sensitivity in areas of recession
- Progressive recession or chronic inflammation
- For teeth with subgingival restorations where there is little or no attached gingiva to improve plaque control
- Ridge augmentation
- To increase vestibular depth for the correct fit of prosthesis
- To widen zone of attached gingiva for prosthetic abutment teeth
- To increase vestibular depth to allow proper oral hygiene techniques
- Gingival clefting

Combined connective and double pedicle graft is not indicated for the following:
- Roots covered with thin bony plates
- Patients with an untreated medical condition

**Free Soft Tissue Graft Procedure (Including Donor Site Surgery)**

Free soft tissue graft procedure is indicated for the following:
- Unresolved sensitivity in areas of recession
- Progressive recession or chronic inflammation
- For teeth with subgingival restorations where there is little or no attached gingiva to improve plaque control
- To increase vestibular depth for the correct fit of prosthesis
- To widen zone of attached gingiva for prosthetic abutment teeth
- To increase vestibular depth to allow proper oral hygiene techniques
- Gingival clefting
Free soft tissue graft procedure is not indicated for the following:
- Broad, shallow palatal donor site
- Excessively glandular or fatty submucosal tissue in donor site
- A donor site with roots covered with thin bony plates
- Patients with an untreated medical condition

**Biologic Materials to Aid in Soft and Osseous Tissue Regeneration**

Biologic materials to aid in soft and osseous tissue regeneration are indicated to enhance periodontal tissue regeneration and healing for mucogingival defects in conjunction with mucogingival surgeries with or without guided tissue regeneration.

**Guided Tissue Regeneration – Resorbable and Non-Resorbable Barrier (Includes Membrane Removal)**

Guided tissue regeneration is indicated for the following:
- For sensitivity in areas of recession
- Progressive recession or chronic inflammation
- Areas of bone dehiscence and fenestration
- Single tooth, wide and deep localized recession
- For areas associated with failed cervical restorations

Guided tissue regeneration is not indicated for the following:
- Multiple adjacent tooth sites of root coverage required
- Solely for cosmetic/aesthetic purposes

**DEFINITIONS**

**Autogenous Graft**: Tissue transferred from one position to another within the same individual.

**Graft**: Defined by any of the following (AAP 2007):
- Any tissue or organ used for implantation or transplantation.
- A piece of living tissue placed in contact with injured tissue to repair a defect or supply deficiency.
- To induce union between normally separate tissues.

**Quadrant**: One of the four equal sections into which the dental arches can be divided; begins at the midline of the arch and extends distally to the last tooth.

**Recession**: Location of marginal periodontal tissues apical to the cemento-enamel junction (AAP 2007). Miller’s Classification of Gingival Recession (Takei 2015):
- Class I: Marginal tissue recession does not extend to the mucogingival junction. There is no loss of bone or soft tissue in the interdental area. This type of recession can be narrow or wide.
- Class II: Marginal tissue recession extends to or beyond the mucogingival junction. There is no loss of bone or soft tissue in the interdental area. This type of recession can be subclassified into wide and narrow.
- Class III: Marginal tissue recession extends to or beyond the mucogingival junction. There is bone and soft tissue loss interdentally or malpositioning of the tooth.
- Class IV: Marginal tissue recession extends to or beyond the mucogingival junction. There is severe bone and soft tissue loss interdentally or severe tooth malposition.

**Site**: A term used to describe a single area, position, or locus. The word “site” is frequently used to indicate an area of soft tissue recession on a single tooth or an osseous defect adjacent to a single tooth; also used to indicate soft tissue defects and/or osseous defects in edentulous tooth positions.
- If two contiguous teeth have areas of soft tissue recession, each area of recession is a single site.
- If two contiguous teeth have adjacent but separate osseous defects, each defect is a single site.
- If two contiguous teeth have a communicating interproximal osseous defect, it should be considered a single site.
- All non-communicating osseous defects are single sites.
- All edentulous non-contiguous tooth positions are single sites.
- Depending on the dimensions of the defect, up to two contiguous edentulous tooth positions may be considered a single site.

**APPLICABLE CODES**

The following list(s) of procedure and/or diagnosis codes is provided for reference purposes only and may not be all inclusive. Listing of a code in this policy does not imply that the service described by the code is a covered or non-covered health service. Benefit coverage for health services is determined by the member specific benefit plan.
document and applicable laws that may require coverage for a specific service. The inclusion of a code does not imply any right to reimbursement or guarantee claim payment. Other Clinical Policies and Coverage Guidelines may apply.

<table>
<thead>
<tr>
<th>CDT Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>D4265</td>
<td>biologic materials to aid in soft and osseous tissue regeneration</td>
</tr>
<tr>
<td>D4266</td>
<td>guided tissue regeneration – resorbable barrier, per site</td>
</tr>
<tr>
<td>D4267</td>
<td>guided tissue regeneration – nonresorbable barrier, per site (includes membrane removal)</td>
</tr>
<tr>
<td>D4270</td>
<td>pedicle soft tissue graft procedure</td>
</tr>
<tr>
<td>D4273</td>
<td>autogenous connective tissue graft, per tooth</td>
</tr>
<tr>
<td>D4275</td>
<td>non-autogenous connective tissue graft, each additional tooth</td>
</tr>
<tr>
<td>D4276</td>
<td>combined connective tissue and double pedicle graft, per tooth</td>
</tr>
<tr>
<td>D4277</td>
<td>free soft tissue graft procedure (including donor site surgery), first tooth or edentulous tooth position in graft</td>
</tr>
<tr>
<td>D4278</td>
<td>free soft tissue graft procedure (including donor site surgery), each additional contiguous tooth or edentulous tooth position in same graft site</td>
</tr>
<tr>
<td>D4283</td>
<td>autogenous connective tissue graft, each additional contiguous tooth</td>
</tr>
<tr>
<td>D4285</td>
<td>non-autogenous connective tissue graft first tooth</td>
</tr>
<tr>
<td>D4999</td>
<td>unspecified periodontal procedure, by report</td>
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**DESCRIPTION OF SERVICES**

The American Academy of Periodontology (AAP) guidelines stress that periodontal health should be achieved in the least invasive and cost effective manner. Using non-surgical periodontal therapy, many patients can be treated and maintained without the need for surgical intervention. However, surgical procedures may be required when periodontal health cannot be achieved or maintained non-surgically. Mucogingival conditions are deviations from the normal anatomic relationship between the gingival margin and the mucogingival junction (MGJ). Surgical procedures for mucogingival conditions are designed to correct localized gingival defects and provide a functionally adequate zone of attached gingiva through grafting and guided tissue regeneration. Bone grafting, guided tissue regeneration and the use of biological materials to aid in tissue regeneration have applications in different areas of dentistry, and each has its own coverage rationale and indications. Please see the procedure specific documents for details.

**CLINICAL EVIDENCE**

Atieh et al (2016) Several clinical trials describe the effectiveness of xenogeneic collagen matrix (XCM) as an alternative option to surgical mucogingival procedures for the treatment of marginal tissue recession and augmentation of insufficient zones of keratinized tissue (KT). The aim of this systematic review and meta-analysis was to evaluate the clinical and patient-centered outcomes of XCM compared to other mucogingival procedures. Applying guidelines of the Preferred Reporting Items for Systematic Reviews and Meta analyses statement, randomized controlled trials were searched for in electronic databases and complemented by hand searching. The risk of bias was assessed using the Cochrane Collaboration’s Risk of Bias tool and data were analysed using statistical software. A total of 645 studies were identified, of which, six trials were included with 487 mucogingival defects in 170 participants. Overall meta-analysis showed that connective tissue graft (CTG) in conjunction with the coronally advanced flap (CAF) had a significantly higher percentage of complete/mean root coverage and mean recession reduction than XCM. Insufficient evidence was found to determine any significant differences in width of KT between XCM and CTG. The XCM had a significantly higher mean root coverage, recession reduction and gain in KT compared to CAF alone. No significant differences in patient’s aesthetic satisfaction were found between XCM and CTG, except for postoperative morbidity in favour of XCM. Operating time was significantly reduced with the use of XCM compared with CTF but not with CAF alone. There is no evidence to demonstrate the effectiveness of XCM in achieving greater root coverage, recession reduction and gain in KT compared to CAF alone. Superior short-term results in treating root coverage compared with CAF alone are possible. The authors concluded that there is limited evidence that XCM may improve aesthetic satisfaction, reduce postoperative morbidity and shorten the operating time. Further long-term randomized controlled trials are required to endorse the supposed advantages of XCM.

Jankovic et al. (2012) conducted a 6-month randomized controlled clinical study to compare the results achieved by the use of a platelet-rich fibrin (PRF) membrane or connective tissue graft (CTG) in the treatment of gingival recession and to evaluate the clinical impact of PRF on early wound healing and subjective patient discomfort. Use of a PRF membrane in gingival recession treatment provided acceptable clinical results, followed by enhanced wound healing and decreased subjective patient discomfort compared to CTG-treated gingival recessions. No difference could be
found between PRF and CTG procedures in gingival recession therapy, except for a greater gain in keratinized tissue width obtained in the CTG group and enhanced wound healing associated with the PRF group.

Keceli et al. (2016) Platelet-rich fibrin (PRF) is an autologous preparation that has encouraging effects in healing and regeneration. The aim of this randomized, parallel-group controlled trial was to evaluate the effectiveness of coronally advanced flap (CAF) + connective tissue graft (CTG) + PRF in Miller Class I and II recession treatment compared to CAF + CTG. Forty patients were treated surgically with either CAF + CTG + PRF (test group) or CAF + CTG (control group). Clinical parameters of plaque index, gingival index, vertical recession (VR), probing depth, clinical attachment level (CAL), keratinized tissue width (KT), horizontal recession (HR), mucogingival junction localization, and tissue thickness (TT) were recorded at baseline and 3 and 6 months after surgery. Root coverage (RC), complete RC (CRC), attachment gain (AG), and keratinized tissue change (KTC) were also calculated. All individuals completed the entire study period. At baseline, mean VR, HR, CAL, KT, and TT values were similar. In both groups, all parameters showed significant improvement after treatment except TT. No intergroup difference was observed at 6 months after surgery. The amount of RC and AG, but not KTC and CRC, was higher in the PRF-applied group. According to the results, the addition of PRF did not further develop the outcomes of CAF + CTG treatment except increasing the TT. However, this single trial is not sufficient to advocate the true clinical effect of PRF on recession treatment with CAF + CTG, and additional trials are needed.

Kuis et al. (2013) conducted a 5-year, split mouth-design randomized clinical trial, to evaluate the effectiveness of coronally advanced flap (CAF) alone versus CAF with connective tissue graft (CAF+CTG) in the treatment of single Miller Class I and II GR defects. Thirty-seven patients with 114 bilateral, single Miller Class I and II GR defects were treated with CAF on one side of the mouth and CAF+CTG on the other side. Clinical measurements (GR length [REC], keratinized tissue width [KT], complete root coverage [CRC], and percentage of root coverage [PRC]) were evaluated before surgery and after 6, 12, 24, and 60 months. There was a significant reduction of REC and increase of KT after surgery in both groups. CAF+CTG showed significantly better results for all evaluated clinical parameters in all observed follow-up periods. The authors concluded that both surgical procedures were effective in the treatment of single Miller Class I and II GR defects. The CAF+CTG procedure provided better long-term outcomes (60 months postoperatively) than CAF alone. Long-term stability of the gingival margin is less predictable for Miller Class II GR defects compared to those of Class I.

McGuire et al. (2014) conducted a study to compare the clinical parameters 5 years postoperatively, of a previously reported split-mouth, randomized controlled trial. In that study, Miller Class II gingival recession defects were treated with either a connective tissue graft (CTG) (control) or recombinant human platelet-derived growth factor-BB + β-tricalcium phosphate (test), both in combination with a coronally advanced flap (CAF). Twenty of the original 30 patients were available for follow-up 5 years after the original surgery. Outcomes examined were recession depth, probing depth, clinical attachment level (CAL), height of keratinized tissue (wKT), and percentage of root coverage. Group results at 6 months and 5 years were compared with original baseline values. At 5 years, all parameters for both treatment protocols showed statistically significant improvements over baseline. The primary outcome parameter, change in recession depth at 5 years, demonstrated statistically significant improvements in recession over baseline, although intergroup comparisons favored the control group at both 6 months and 5 years. At 5 years, intergroup comparisons also favored the test group for percentage root coverage and change in wKT, whereas no statistically significant intergroup differences were seen for 100% root coverage and changes to CAL. The authors concluded that treatment with either test or control treatments for Miller Class II recession defects appear to lead to stable, clinically effective results, although CTG + CAF resulted in greater reductions in recession, greater percentage of root coverage, and increased wKT.

Moslemi et al. (2011) conducted a randomized clinical trial to compare the long-term results of subepithelial connective tissue graft (SCTG) versus acellular dermal matrix allograft (ADMA) in treatment of gingival recessions. There were 16 patients with bilateral Miller Class I/II gingival recessions selected. One side was treated with SCTG and the other side with ADMA. Clinical parameters of complete root coverage (CRC), reduction of recession depth (RD) and reduction of recession width (RW) were measured at baseline, 6 months, and at 5 years post-surgery. At 5 years, significant relapses were detected in CRC and reduction of RD and RW in both groups, with no statistically significant differences. Compared with baseline, the gingival width (GW) did not increase in ADMA-treated sites. The five-year results of SCTG and ADMA were similar in terms of CRC and reduction of RD and RW. (Both techniques showed a significant relapse associated with returning to horizontal toothbrushing habit). Increase of GW was stable in SCTG-treated sites, but reached to pre-surgical values in ADMA-treated cases.

Rosetti et al. (2013) completed a 30-month follow-up clinical trial to assess the long term stability of the root coverage of subepithelial connective tissue graft and guided tissue regeneration combined with demineralized freeze-dried bone allograft (GTR-DFDBA). Twenty-four defects were treated in 12 patients who presented with canine or premolar Miller class I and/or II bilateral gingival recessions. GTR-DFDBA and SCTG treatments were performed in a randomized selection in a split-mouth design. The following clinical parameters were assessed at 6, 18 and 30 months post-surgery: root coverage (RC), gingival recession (GR), probing depth (PD), clinical attachment level (CAL) and
keratinized tissue width (KTW). The authors concluded that there were not significant differences in RC, GR, PD and CAL for both procedures, but the increase in KTW was significantly higher in the SCTG group than in the GTR-DFDBA group. The authors concluded that both procedures provide adequate root coverage over the long term, with the connective tissue graft procedure promoting a more favorable increase in keratinized tissue.

Trivedi et al. (2014) conducted a comparative, split mouth, six month study to clinically compare and evaluate subepithelial connective tissue graft and GTR based root coverage in treatment of Miller's Class I gingival recession. 30 patients with at least one pair of Miller's Class I gingival recession were treated either with subepithelial connective tissue graft (Group A) or Guided tissue regeneration (Group B). Clinical parameters monitored included recession, width of keratinized gingiva, probing depth, clinical attachment level, attached gingiva, residual probing depth and percent of root coverage. Measurements were taken at baseline, three months and six months. At end of six months both treatments resulted in statistically significant improvement in clinical parameters measured. When compared, no statistically significant difference was found between both groups except in residual probing depths, where it was significantly greater in the group treated with subepithelial connective tissue grafting procedure. Percent of root coverage was similar. The authors concluded that GTR technique has advantages over subepithelial connective tissue graft for shallow Miller's Class I defects and this procedure can be used to avoid patient discomfort and reduce treatment time.

Zucchelli et al (2014) conducted a comparative short- and long-term controlled randomized clinical trial to compare short- and long-term root coverage and aesthetic outcomes of the coronally advanced flap (CAF) alone or in combination with a connective tissue graft (CTG) for the treatment of multiple gingival recessions. Fifty patients with multiple adjacent gingival recessions (≥2 mm) in the maxillary arch were enrolled. Twenty-five patients were randomly assigned to the control group (CAF), and the other 25 patients to the test group (CAF + CTG). Clinical outcomes were evaluated at 6 months, 1 and 5 years. The aesthetic evaluations were made 1 and 5 years after the surgery. No statistically significant difference was demonstrated between the two groups in terms of recession reduction and complete root coverage (CRC) at 6 months and 1 year. At 5 years, statistically greater recession reduction and probability of CRC, greater increase in buccal keratinized tissue height (KTH) and better contour evaluation made by an independent periodontist were observed in the CAF + CTG group. The authors concluded that despite no significant differences at 6 month and 1 year evaluations, CAF + CTG provided better CRC after 5 years than CAF alone.

U.S. FOOD AND DRUG ADMINISTRATION (FDA)

Products used for bone grafting and resorbable and non-resorbable membranes for guided tissue regeneration use in periodontal applications are extensive. See the following website for more information and search by product name in device name section: http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/pmncfm (Accessed December 2016)

Connective tissue grafting products from donated human skin are regulated by the (FDA) as human tissue for transplantation. They are processed and marketed in accordance with the FDA’s requirements for banked human tissue (21 CFR, Part 1270 and Part 1271) and Standards for Tissue Banking of the American Association of Tissue Banks (AATB). Information can be found here: http://www.fda.gov/BiologicsBloodVaccines/TissueTissueProducts/default.htm (Accessed December 2016)

Currently, there are two biologic products approved by the FDA for regenerative periodontal therapy.

- GEM 21S™ (BioMimetic Pharmaceuticals, Inc.) See the following website for more information: http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/PMN.cfm (Accessed December 2016)

- Emdogain™ (Straumann) See the following website for more information: http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/PMN.cfm (Accessed December 2016)

REFERENCES


**POLICY HISTORY/REVISION INFORMATION**

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Surgical Periodontics: Mucogingival Procedures
UnitedHealthcare Dental Clinical Policy

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